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Yeast Bread and Its Variations

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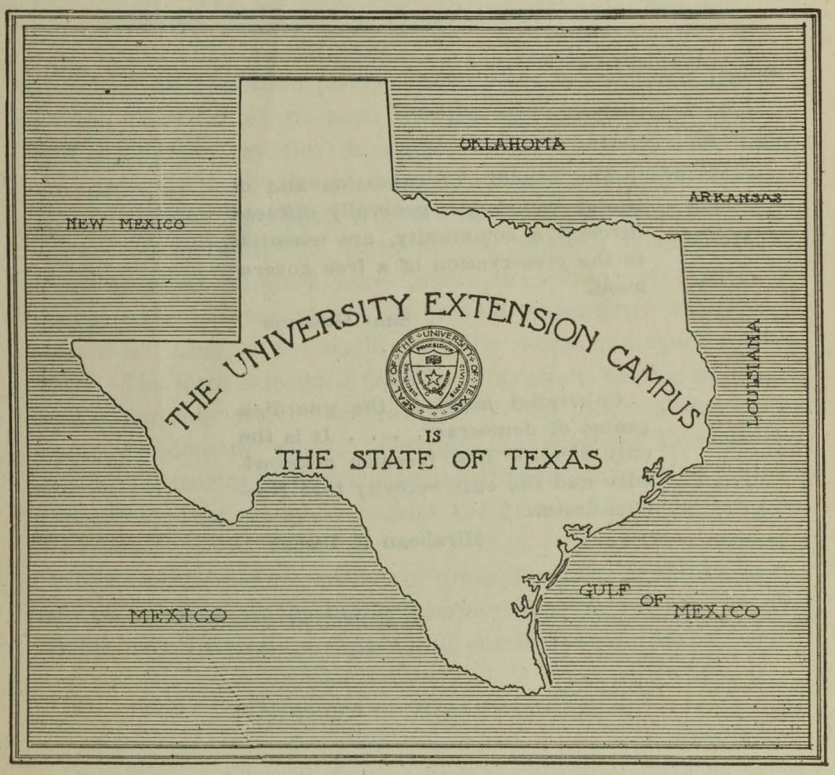

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The benefits of education and of useful knowledge, generally diffused through a community, are essential to the preservation of a free government.

Sam Houston

Cultivated mind is the guardian genius of democracy. . . . It is the only dictator that freemen acknowledge and the only security that freemen desire.

Mirabeau B. Lamar

YEAST BREAD AND ITS VARIATIONS.

There is no article of diet more universally used and more capable of variations than bread, and no matter whether it be the corn pone of America, the black bread of the German peasant or the oatmeal scone of the Scotch laborer, it is a valuable source of nutriment.

Methods of Grinding Grain and Making Bread.

Almost all primitive people, including the American Indian, ground their grain into meal between two stones. Indeed it is still a common practice in semi-civilized countries. We have only to cross the border to the south of us to find the Mexican woman patiently grinding her corn in this fashion for her daily supply of *tortillas*, the bread of the Mexican laboring class. More than six hundred years before the coming of Christ the Egyptians cultivated wheat. At first the wheat grain was ground into flour meal by the teeth, then the pestle and mortar were used. The Greeks learned from the Egyptians the use of wheat and when they were made captives by the Romans they were made grinders of wheat. Through the practical Romans the pestle and mortar were fastened together into what they termed the querm, this gradually became the grist mill, which was run by slaves.

The evolution of the milling of grain, from the primitive methods of grinding to the highly complex steel roller mills, is one of the most interesting chapters in our industrial history.

Methods of Bread Making.

It is frequently said that a people's civilization may be measured in terms of their bread making. In the earliest history of mankind both leavened and unleavened bread were used, the unleavened being the simplest product and consisting of flour or meal and water mixed together and baked.

Examples of unleavened bread are found in the Passover

cake of the Israelites, in the hard tack and sea biscuit used by the Navy and the Army of today and the Scotch oat cake and the corn pone in the South. No doubt the first leavened bread was merely a "happen so," the mixture of flour and water having set long enough for the yeasts falling in from the air to aid in a spontaneous fermentation. As the milling process was too difficult and the grain too scarce to waste, this mixture was baked and Lo! a bread of better taste and texture was the result. It was only a step from this method to saving a piece of dough to induce fermentation in a new batch. As it was not possible to keep dough for weeks or even months the method of drying yeast was finally evolved. Since the process of making bread from the dry yeast cake was a long one, beer yeast or soft yeast in time became the most popular. The Greeks and Romans made good bread and maintained regular bake shops, where it could be purchased. As early as 170 B. C. baking was a regular trade in Rome.

The Bodies Need of Food

To keep her family in good health through the use of proper foods it is necessary that a woman should know that the body is made up of water and certain substances called carbohydrates, fats, proteins and mineral salts, and that it is constantly being built up and torn down. Whether we are awake or asleep the body goes on working. The heart must keep up its steady beating and other vital processes must go on so that it is necessary that these materials, essential to its growth and repair, be taken into the body in the form of food. Protein is a muscle building substance, carbohydrates and fats give the energy to build and to work while mineral salts regulate the vital processes of the body as well as enter into its composition.

It would be impossible to live on one or even two of these substances alone, but it is necessary that each of them should be found in our daily meals and in relatively the right proportion, if the body is to be made healthful.

The Balanced Ration.

Nutrition experts have worked out the proper diet for the average man. They say he should have about four ounces per day of protein, four of fat, and about eighteen of digestible carbohydrates so chosen that the mineral salts requirement is included and enough bulk is given to satisfy and to provide work for the intestines.

As soon as we begin to think of balanced rations we must begin to think of food composition; e. g. when we say four ounces of protein we do not mean four ounces of meat. Although meat is very high in protein it has a certain amount of fat, a certain amount of connective tissue, a certain amount of water. In order to feed four ounces of protein we must know what per cent of each food served is protein. Thus we might get ½ ounce of protein from bread, ½ ounce from vegetables, 1 ounce from eggs and one ounce from milk and use no meant at all.

In Farmers' Bulletin No. 128, United States Department of Agriculture, we find the composition of nearly all our common food stuffs and can easily estimate the amount of protein we are feeding or should feed.

Wheat Flour a Valuable Food

The wheat grain contains all of the food constituents. The amount recovered in the flour will be determined by the milling process; e. g., in Graham flour, which is usually a mixture made by the miller but which should be a wheat meal containing all of the grain, 100 lbs. of wheat will yield 100 lbs. of flour. In whole or entire wheat flour, which as a matter of fact has some bran although the manufacturers claim it contains all of the nutritious part of the wheat grain minus the bran, 100 lbs. of wheat yields 85 lbs. of flour.

The white patent flour has the bran, aleurone layers, and the germ removed thus removing much nitrogenous matter, mineral salts, and fat, and only 72 pounds of flour is recovered from 100 pounds of wheat.

In these different flours there is perhaps as great a difference in the digestion of the different nutriments.

Breads made from these three flours were submitted to digestive experiments and it was found that while with white bread 85 per cent of the protein, 56.4 per cent fat, 97.5 carbohydrates were digested; with entire wheat 80.4 per cent protein, 55.8 per cent of the fat, 94.1 per cent of the carbohydrates; and with Graham bread 77.6 per cent protein, 58 per cent fat, and 88.4 per cent carbohydrates. As a source of protein and energy the coarser and finer flours are nearly equal in digestive nutriments. Experiments have shown that the amount of protein digested and absorbed from a pound of Graham or "entire wheat" or from a pound of patent flour is practically the same, but Sherman points out that bran yields from 10 to 20 times as much of the ash, which is essential to the body, as does patent flour and that three-fourths of the ash constiuents of the wheat kernel is lost to man in the process of manufacturing the wheat into white flour. Doubtless there is a greater loss in digestion for the Graham and "entire wheat" than for the patent flour. It has been shown, however, that from a pound of genuine whole wheat bread at least twice as much phosporus, iron and calcium compounds are absorbed as from a pound of white bread.

AMOUNTS OF ENERGY AND PROTEIN OBTAINED FOR 10 CENTS EXPENDED FOR BREAD AND OTHER FOODS.

(Figures from Farmers' Bulletin No. 487, United States Department of Agriculture.)

Food Material	Price per pound	10c will buy ounces	10c worth will contain	
			Protein ounces	Fuel Value Calories
Wheat bread	5c	32	2.9	2400
Cheese	22c	7.3	1.9	886
Beef average	20c	8.0	1.2	467
Dried beef	25c	6.4	.1	315
Eggs	25c	1.0	1.3	198
Milk, per quart	9c	38.3	1.2	736
Potatoes, per bushel..	60c	106.7	...	2950

From this table we may see that with normal prices we may expect to get more protein and more energy value from 10 cents spent in bread than 10 cents spent in beef steak or cheese. In the amount of bread we would care to eat we would scarcely find enough protein. If we, at the same time, drink unskimmed milk we add protein and also add mineral salts which were removed from the wheat in the milling process. In this way we may secure a well balanced and easily digested ration.

Essentials for Good Bread.

To make good bread it is necessary to have good flour, good yeast, a good oven and ability to control the temperature to some degree during the rising process.

Sugar, salt, fat and various liquids are used chiefly for flavor.

Flours.

There are two kinds of wheat, winter and spring, or soft and hard. There is a harder variety of winter wheat, but it is not so hard as the spring wheat.

The winter wheat, which is the wheat sown in the fall of the year and developing through the winter and summer, has a much higher starch content than does that sowed in the spring and harvested in the autumn. On the other hand, the spring wheat which has so much shorter time to grow has a higher protein content. Flour contains two proteins, glutenin and gliadin. When subjected to pressure and moisture these proteins combine to form a sticky substance called gluten. It is on the elasticity of this gluten that we depend for the expansion of our bread. To make the most elastic gluten these two proteins must bear the relation of two of gliadin to one of glutenin.

After moisture is added manipulation aids in developing this gluten. Without manipulation the amount of gluten developed is negligible. This accounts for the fact that cake batters made from bread flour which are beaten a great deal, are bready and that very poor flours may make good bread if manipulated until all the potential gluten is developed. The wrink-

ling of a loaf made from soft flour is likewise accounted for by the lack of sufficient gluten to form a perfect framework for the loaf. The better the grade of this gluten the less flour is needed to make a stiff dough from one cup of liquid. The best grade of spring flour will require only three cups of flour to the cup of liquid, while as many as 5½ may be required for winter wheat flour.

Gluten is the substance which distinguishes the wheat flour from other flours and makes a yeast bread possible from wheat flour, but impossible from the meals made from corn, cotton seed or the grain sorghums, when these are used alone.

Since hard wheat flour will make a larger loaf from a given amount of liquid and at the same time take less time in manipulation it is evident that the hard wheat from a standpoint of money and time expended is cheaper. It is possible by kneading until all the potential gluten is developed to obtain a good loaf of bread when using part flour and part some non-glutenous food stuff. In this way bread may be made with one-fifth to one-third of peanut, bran, cotton seed, corn or rice meal.

Flour on standing bleaches and has been found to give more satisfactory results in bread making. This, perhaps is the reason why people came to prefer white flour. The millers found that by treating the flour with nitrogen peroxide or electricity they could bleach it. This bleaching gave a whiter flour and a better appearing bread from new flour. There is apparently no reason why bleached flour should not not be used as the nitrites to be found in the amount of flour used by one individual in a year would not exceed a medicinal dose.

Yeasts.

Yeasts are tiny microscopic plants everywhere present in the air. In order to grow they must have moisture, warmth, and a sugar solution to feed on. We can detect the presence of yeast in any material by its action. As soon as it begins to feed on the sugar it gives off alcohol and carbon dioxide. This produces the mass of bubbles which are present in fermentation. If fermentation continues too long, the alcohol is changed

into acetic acid. Just as other wild plants have been cultivated and improved, so have yeasts been cultivated from this wild yeast in the air. The cultivated yeasts are greatly superior and are also free from other microscopic forms of life that are likely to produce undesirable flavors. There are three types of yeast in general use—liquid, dry, and compressed.

Liquid Yeast: Liquid yeast is a mixture of yeast and water with flour and salt, or with potatoes and salt. Because of the moisture and the food present in liquid yeast the yeast plants may be easily affected by the weather and are much more likley to contain other microscopic forms of life which will give a bad flavor to the bread.

Dry Yeast: Is prepared by mixing fresh yeast with corn meal, flour or starch, pressing it into cakes and drying it. This will keep for a long time, but the yeast plants are in a resting stage and it takes a greater length of time for them to begin to grow when used in bread making.

Compressed Yeast: Is made with yeast from the distillers' vats. It is thoroughly cleaned, pressed into cakes and wrapped in tinfoil. When fresh it is moist, firm and of a light cream color and the yeast plants are in a good growing condition, but it will not keep very long even in a cool place. It should never be used when mouldy spots appear or when it is soft and stringy, else the flavor of the bread will not be good. When plants are in a growing condition they are filled with a sap or juice which is merely a weak sugar solution. This sugar solution is supplied to the yeast in three ways, (1) sugar is present in the flour, (2) when the flour is wet a certain amount of it is changed to sugar by enzyme action, (3) sugar may be added.

Effect of Too Much Sugar.

When over two tablespoons of sugar to the cup of liquid is used a decrease is seen in the size of the loaf and a corresponding increase in the length of time required to raise it. This is because of the reversal in the direction of the flow due to osmotic pressure produced by the pressure of the highly saturated sugar solution surrounding the yeast cells. This would be equally true of salt solutions within smaller limits.

Effect of Fat.

Fat produces a tender, better flavored crumb, but if more than two tablespoons to a cup of liquid is used the growth of the yeast is retarded.

Effect of Temperature on Yeast.

Eighty degrees F. or a little below blood heat seems the best average temperature for the growth of the yeast plants. At a temperature above blood heat (100° F.) the yeast is weakened and at the boiling point it is killed. At a temperature below 80° F. the yeast does not develop rapidly enough and other organisms (bacteria and molds) contained in the flour have an opportunity to flourish and form products which give the bread an unpleasant flavor.

Effect of Egg on Yeast.

The yolk of an egg seems to stimulate the action of the yeast plant and an increase in the size of the loaf results.

Effect of Yeast on Flavor.

The amount of yeast used in a loaf of bread is determined by the amount of sugar, fat, fruits, etc., used, by the temperature of the air, and by the time that can be allowed for rising. As many as four yeast cakes to the loaf may be used without impairing the flavor of the bread if care is taken to see that it never more than doubles in bulk. With proper temperature conditions, bread may be ready to bake or rolls may be baked and out of the oven in two hours if three (Fleischman's) yeast cakes are used for each cup of liquid. Two yeast cakes give an excellent loaf. The cost of the loaf increased in proportion to the number of cakes used, and it is unnecessary to use so many except in an emergency. One yeast cake will make four loaves of bread, but more time for rising must be allowed. Bread may be made and baked in less than six hours by allowing one-half yeast cake to a loaf of bread.

The kind of yeast one may use with good results depends upon the time at one's disposal. When any form of dry yeast is used the bread will rise more rapidly if a cup of sponge saved from a previous baking is added.

The Effect of Kneading and Several "Raisings" on Bread.

Much kneading and many "raisings" produce a much finer texture and a more attractive loaf, though this does not increase the dietetic value of the bread. The kneading develops all of the gluten and distributes the air bubbles evenly, thus producing the finer grain. When dough has doubled in bulk three or more times a whiter, silkier, more elastic crumb results.

Bread which is poorly expanded and half baked cannot be completely digested. There is not only an economic waste involved, but the health of the family fed habitually upon such bread might be seriously impaired. In good bread the starch grains are perfectly expanded and in a soluble form, some of the starch has been changed to sugar and some of the sugar caramelized.

Chemical Changes Taking Place in Bread Making and Baking.

During the growth of the yeast plant, starch is changed to sugar and sugar is changed to alcohol and carbon dioxide. It is the expansion of this gas which stretches the elastic gluten and so brings about what we term the "raising" of the loaf of bread. If allowed to set too long before kneading, the alcohol may become changed to acetic acid and thus produce sour bread. If bread is never allowed to more than double in bulk this change will not occur. During the baking process the starch grains are well expanded, a small amount of the starch in the crust is turned into dextrine, the alcohol and carbon dioxide are driven off and a certain amount of the fat is oxidized.

The additional raising of the bread after it is placed in the oven does not of necessity mean further chemical change, but that the gases are obeying the law for the expansion of gases

and expanding 1/273 of their volume for every degree Fahrenheit.

Methods of Making Bread.

There are two methods of making bread—the sponge method and the dough method. In the sponge method the liquid, sugar, yeast, and half the flour are made into a batter which is allowed to set until it doubles in bulk before it is made into a stiff dough. This method is best when dry yeast or a small amount of soft yeast is used.

In the dough method the bread is made into a stiff dough at once. This method is the most desirable if as much as one cake of soft yeast to the cup of liquid is used.

Bread—Sponge Method.

1 cup scalded liquid
1 tablespoon fat
1 tablespoon sugar
3½ cups flour (or enough to make a dough stiff enough to knead without sticking to the board or hands),
¼ cake yeast
1 teaspoon salt.

To scalding liquid add the sugar, salt and fat. When this mixture is lukewarm add the yeast cake, softened into a paste in one tablespoon of cold liquid, and one-half the flour. Beat this mixture well and set it in a pan of warm water until it doubles in bulk. When the sponge has doubled in bulk add flour until the dough is stiff enough to remove to the moulding board to knead. All of the flour in the bowl should be worked into the bread, leaving the bowl clean. Knead the bread for ten minutes and turn over in the bowl, which has been washed perfectly clean in cold water and drained, but not dried. This gives a moist surface and prevents a crust from forming. When a crust forms and is kneaded into the bread dark streaks result. When this dough has doubled in bulk cut it down. When it doubles in bulk the second time mould it into a loaf, place in a greased pan and cover well. The bread should be a rounded

loaf when placed in the pan and should not be forced into the corners but allowed to adjust itself in the pan. The bread should not quite double in bulk before it is placed in the oven if a close grained loaf is desired. The oven should be hot enough so that the loaf begins to brown in ten minutes and is a beautiful golden brown in twenty minutes. At the end of forty-five minutes the loaf of bread should shrink from the pan and the crust be firm enough to resist indentation from gentle pressure.

If a crisp crust is desired the bread should be cooled in the air. If a soft crust is desired the loaf may be brushed with fat and covered. So far, experimenting has shown that there is no undesirable result from covering warm bread with porous cloth or paper.

Bread—Dough Method

Use the same amounts of materials using ½ yeast cake instead of ¼, and make the bread stiff at once.

Rolls

If rolls are desired use twice as much sugar and fat and do not knead the dough after the first rsing before forming the rolls. It is well to allow the rolls to double in bulk and then put them in the ice chest until it is time to bake them. The oven for rolls should be very hot. When they begin to brown brush lightly with fat and continue baking. Rolls should not touch each other in the pan but should have a perfectly browned crust over the whole outside. The dough made from one cup of liquid should make twenty-four family sized rolls or forty-eight reception rolls. The raised dough may be rolled out lightly with a rolling pin to ¼ inch in thickness, cut out with a biscuit cutter, and each roll brushed lightly with melted butter or peanut oil. Fold, allowing the top to overlap the bottom so that the roll does not spring open in rising. Allow to double in bulk before baking.

Variations in Flour

The flavor and food value of bread may be greatly altered by substituting other flours or food stuffs for wheat flour. Cottonseed flour, with a protein content much higher than the leanest cut of meat, makes an excellent substitute for one-fourth of the flour. This bread dries out very rapidly but this may be overcome by adding one cup of a standard cornmeal mush.

Variations in Liquid.

The flavor of bread may be greatly altered by using teas, fruit juices or buttermilk whey. Tea made from English saffron, using one rounding teaspoon of saffron to one cup of liquid will give a delightful flavor and color to bread.

Fancy Breads

The following breads form wholesome sweets for the children:

German Sweet Bread

Take one loaf from the baking of bread, add to this raised dough one-half cup of sugar, one-half cup of fat and one teaspoon of cinnamon. When this has been worked in, roll or pat the dough out into a baking pan. The dough should be about one inch thick and the pan about two inches deep. When the dough has doubled in bulk push the index finger through the bottom, making wells about one inch apart, fill the well as soon as made with sugar flavored highly with powdered cinnamon. After making and filling the wells drop melted butter on each and when the mixture raises until it springs back from an indentation made with the finger bake it slowly for thirty minutes.

Swedish rolls may be made by rolling this dough to the thickness of one-half inch, brushing with fat, sprinkling with sugar, cinnamon, currants and nuts, if desired, and rolling like a jelly roll. Cut pieces about 1½ inches deep from this roll, lay

flat in a buttered pan, when doubled in bulk bake. Baste with honey while baking.

Glazed Current Buns

1¼ cups of scalded cooled milk
3¾ cups of bread flour
¼ cup of sugar
¼ cup of melted fat
½ teaspoon salt
1 egg
½ cup of cleaned currants
2 level teaspoons of corn starch
¾ cup of boiling water
Granulated sugar
Cinnamon if desired

When the milk is lukewarm add the yeast cakes. When they are thoroughly softened add the remaining ingredients and beat well for ten or fifteen minutes. Allow to rise until doubled in bulk then set in the ice box over night. In the morning turn onto a floured board and roll into rectangular piece ¼-inch thick. The mixture is not stiff as bread dough and must be handled while cold. Brush this piece with butter and fold from ends toward center to make three layers. Cut off strips ¾ to 1 inch wide, cover and allow to double in bulk. These strips may be twisted and braided or they may be coiled. If braided sprinkle well with almonds before baking. Bake in a hot oven about twelve to fifteen minutes. When removed from the oven brush with melted fondant. This dough may be baked in tiny timbale molds and eaten with marachino cherry sauce.

Breads Using Wheat Flour Substitutes

Cottonseed Flour Bread

3 cups flour and 1 cup cottonseed flour sifted together.
1 c. scalded liquid
1 tbsp. sugar

1 tbsp. fat
1 tsp. salt
1 yeast cake
Proceed according to general methods for bread making.

Oatmeal Bread

c. oatmeal (cooked very stiff)
¼ c. sugar
1½ tsp. salt
1 cake yeast dissolved in 1 cup lukewarm water
1 tbsp. shortening
Flour to make a dough

To the lukewarm water add the fat, sugar, salt and dissolved yeast; add the oatmeal and flour. Knead thoroughly let double in bulk, shape into loaves; let rise and bake one hour.

Peanut Bread

1 tbsp. sugar
1 tsp. salt
1 tbsp. shortening
1 c. scalded liquid
1 yeast cake
1 c. roasted and hulled peanuts
3 c. wheat flour

Break peanuts into small pieces and mix thoroughly with the flour. Proceed according to general methods for bread making.

Sweet Potato Bread

6 c. sifted flour
2 c. mashed potatoes
¾ c. lukewarm water
1 yeast cake
1 tbsp. sugar
1 tbsp. salt
2 tbsp. shortening

Wash thoroughly and boil in their skins five sweet potatoes of medium size. Cook until they are very tender. Drain, peel, and mash them while hot, putting them through a colander to free the mass from lumps. Allow the mashed potato to cool

until lukewarm. To the cool mashed potato add the yeast, which has been rubbed smooth in ¼ cup lukewarm water. Add the salt, sugar and about two cups of the flour. Mix thoroughly, cover and place the bowl containing the mixture in a warm place and allow to rise until very light. To this sponge add the shortening and remainder of the flour. The dough must be very stiff as the potatoes cause it to soften as it rises. Let rise until light then follow directions for molding and baking as given above.

Rice Bread

1 tbsp. sugar
1½ tsp. salt
⅔ cup lukewarm water
1 yeast cake
1 c. cooked rice
2½ c. wheat flour

Follow general rules for bread making.

Cornmeal Mush Bread

1 tbsp. sugar
1½ tsp. salt
⅔ c. boiled water
1 yeast cake
1 cup mush
2½ to 3 cups flour

Put ½ cup cornmeal into top part of double-boiler, with one cup water; mix thoroughly and bring to boiling point, stirring frequently. Cook until mush is quite thick. Cool it until lukewarm and make the bread according to the directions for sweet potato bread from the point where the yeast, etc., is added to the cooled mashed potato.

Kafir Corn Yeast Bread

2 cups Kafir corn meal
2 cups water
2 tbsp. sugar
2 tbsp. shortening
3 tsp. salt
Wheat flour
1 yeast cake dissolved in
¼ cup lukewarm water

Cook the meal, sugar, salt, water together in a double-boiler for an hour; add the fat and cool. Stir in the yeast mixed with

a little water. Add enough wheat flour to make a soft dough (about 1 cupful). Turn onto a board and knead thoroughly. Form into a loaf and put in a warm place to rise. When light bake in a moderate oven.

Nut Bread

¾ cups scalded milk (cooled)
1 yeast cake
1 tsp. salt
1 cup nuts
2 tbsp. molasses
2 tbsp. shortening
½ c. whole wheat flour
2 ½ cups white flour

Make as ordinary bread, adding the nuts to the scalded milk.